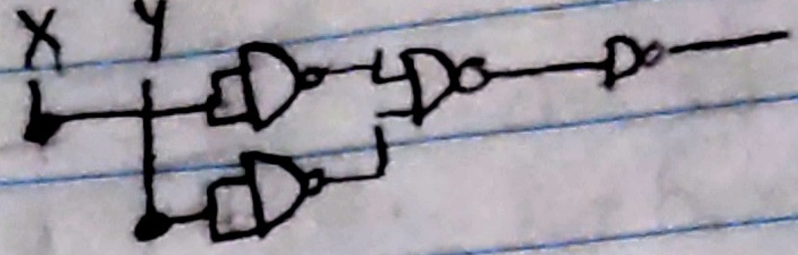
(1) a) i) NOR = $\overline{\bar{x}\,\bar{y}}$

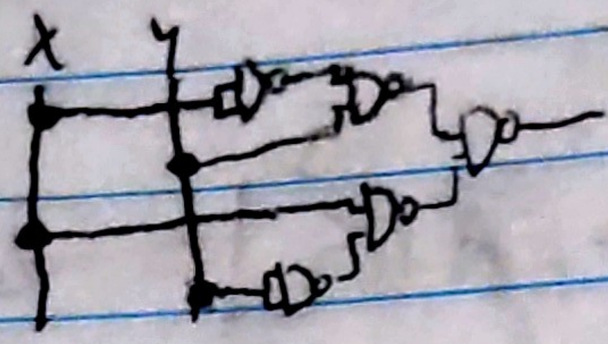
$= \overline{x + y}$

$= \bar{x}\,\bar{y}$



ii) XOR = $\bar{x}y + x\bar{y}$

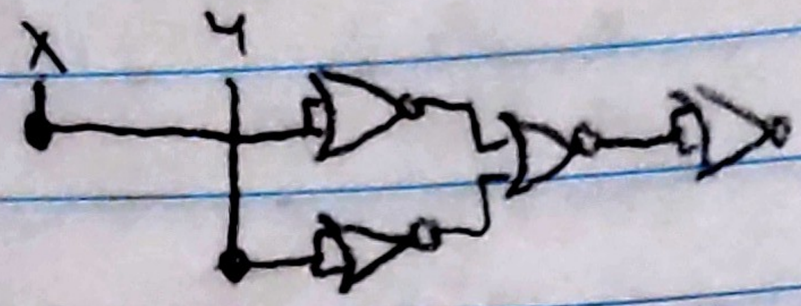
$= \overline{\bar{x}y} \cdot \overline{x\bar{y}}$



b) i) NAND = $\overline{xy}$

$= \bar{x} + \bar{y}$

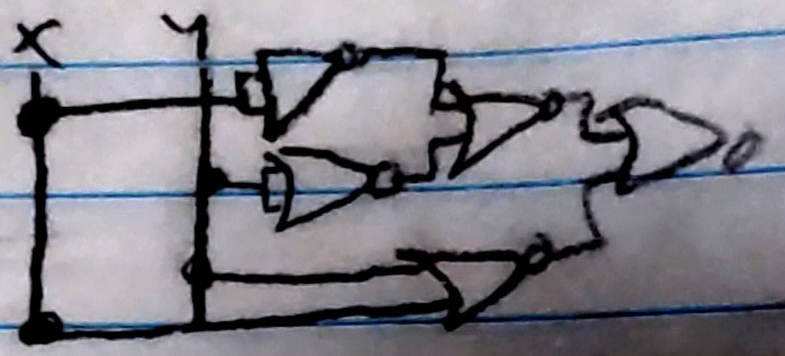
$= \overline{\bar{x} + \bar{y}}$



ii) XOR = $\bar{x}y + x\bar{y}$

$= (x+y)(\bar{x}+\bar{y})$

$= \overline{\overline{x+y} + \overline{\bar{x}+\bar{y}}}$



(2)